



Ohio Department Transportation

EMS/TMS (LEM) Labor, Equipment
and Materials Data Collection

Kaizen Event Report Out

March 4-9 , 2012

TEAM "JETSONS"



The Team

- ▶ Kim Jenkins, Business Analyst, DoIT
- ▶ Kevin Joy, D11, HT
- ▶ Shane Jones, D8, HT
- ▶ Fred Collier, D12, HT
- ▶ Raymond Werry, D10, Timekeeper
- ▶ Gary Apanasewicz, D4, Auto Tech
- ▶ William Parrish, D10, Auto Tech
- ▶ Jonathan Wells, CO, Mechanic Trainer
- ▶ Loretta Kreiger, D3, Timekeeper
- ▶ Becky Bayless, D7, Timekeeper
- ▶ Kathy Stepanovsky, D6, EMS/TMS Coordinator
- ▶ Mark Messick, CO, TMS
- ▶ Ray Henry, D10, EMS/TMS Coordinator
- ▶ William Mason, D10, Storekeeper 2
- ▶ Don Hite, D5, Transportation Manager
- ▶ Kimberly Conklin, D3, County Manager
- ▶ Dave Walton, D9, County Manager
- ▶ Therese Dyer, CO, Cost Accounting
- ▶ Jim Snyder, CO, Cost Accounting
- ▶ Jon Leatherman, CO, Accounting/Inventory
- ▶ Chris Hardesty, D1, BHR
- ▶ Daveen Goodman, CO, Quality
- ▶ Mark Gnatowski, CO, Equip. Management
- ▶ Chuck Bernthold, CO Equip. Management
- ▶ Carol Schubert, CO, Quality
- ▶ Tom Bradford, D5, Roadway Services Manager
- ▶ Tim Farley, D3, HMA
- ▶ Scott Rice, D6, TM

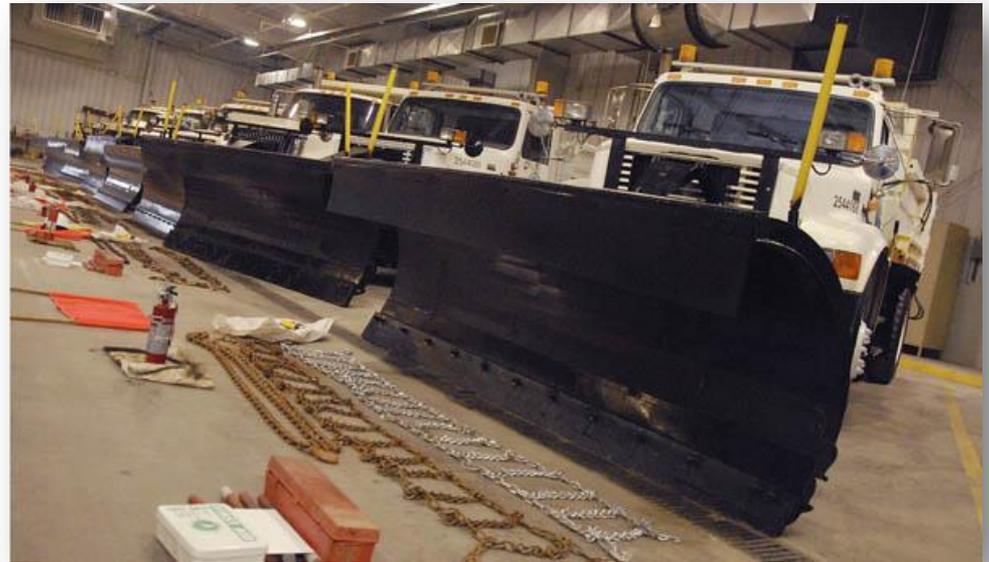
Background

Equipment, parts inventory, materials management and activity-tracking business processes are currently supported using the existing mainframe Equipment Management and Transportation Management System (EMS/TMS). This system was originally implemented over 20 years ago as an Inventory Management system only and was subsequently adapted to support equipment and material management.

Currently, much of the business process supporting agency-wide recording of activity-tracking (including labor), equipment and parts inventory usage, and materials consumption is manual and paper based involving substantive collation by the county, district, and central office

Stakeholders

- ▶ Central Office
- ▶ District Offices
- ▶ Division of Information Technology
- ▶ County garages
- ▶ Division of Finance



SCOPE

SCOPE: The maintenance portion of EMS/TMS begins with the completion of a county management work plan. The process ends when the data is captured and available for reporting and analysis (cost accounting, payroll, and accomplishments).

Overarching Theme:

Standardize asset data for equipment, parts inventory and materials; reduce margin for errors; and standardize system reference data

Out of Scope

Areas that will not change as a result of the Kaizen event are:

- ▶ No one loses their job because of the Kaizen event, but duties may be modified.
- ▶ Need for additional staff is not dependent on improvement process
- ▶ Need for additional monies is not dependent on improvement of process
- ▶ No legislative changes or changes related to collective bargaining.
- ▶ No IT solutions until it is determined that an IT solution is needed.

SIPOC

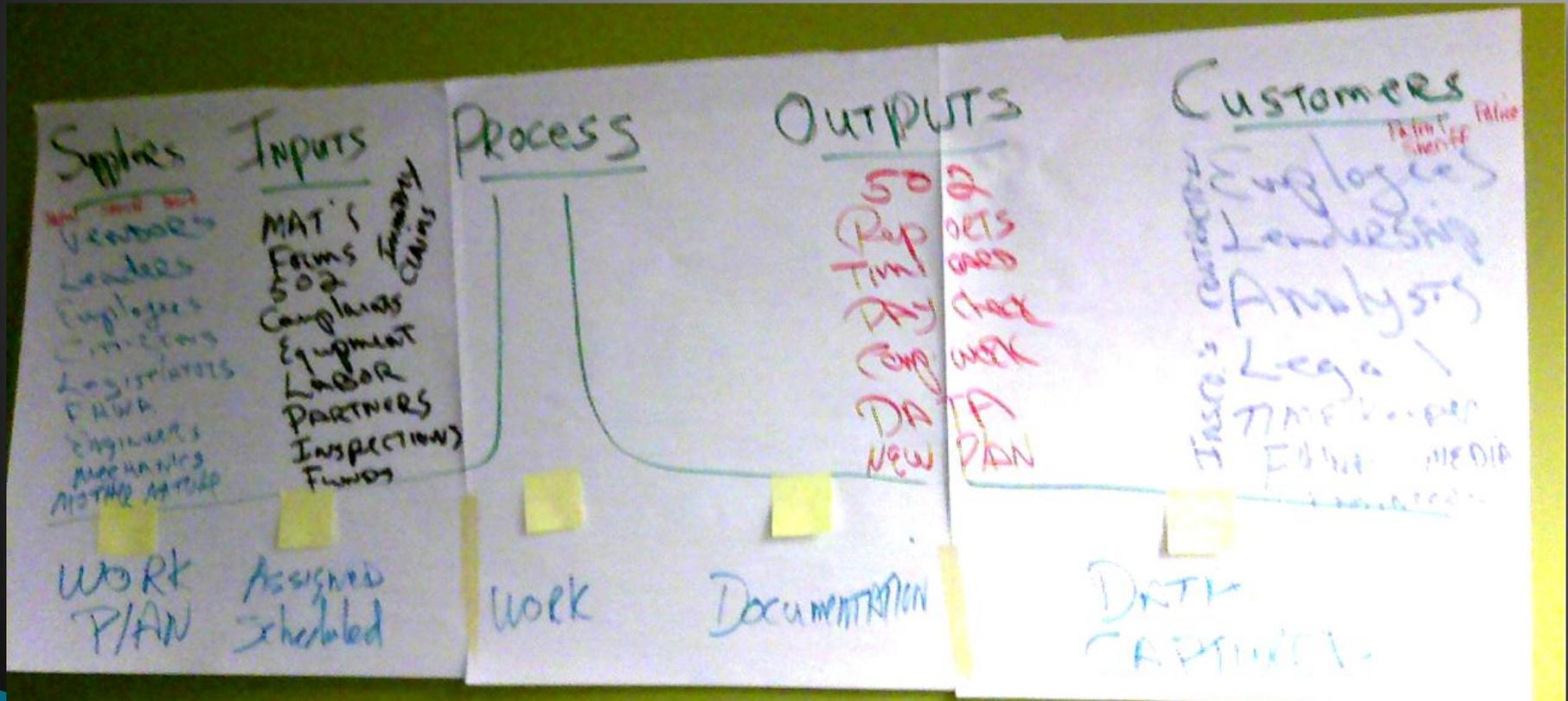
Suppliers

Inputs

Process

Outputs

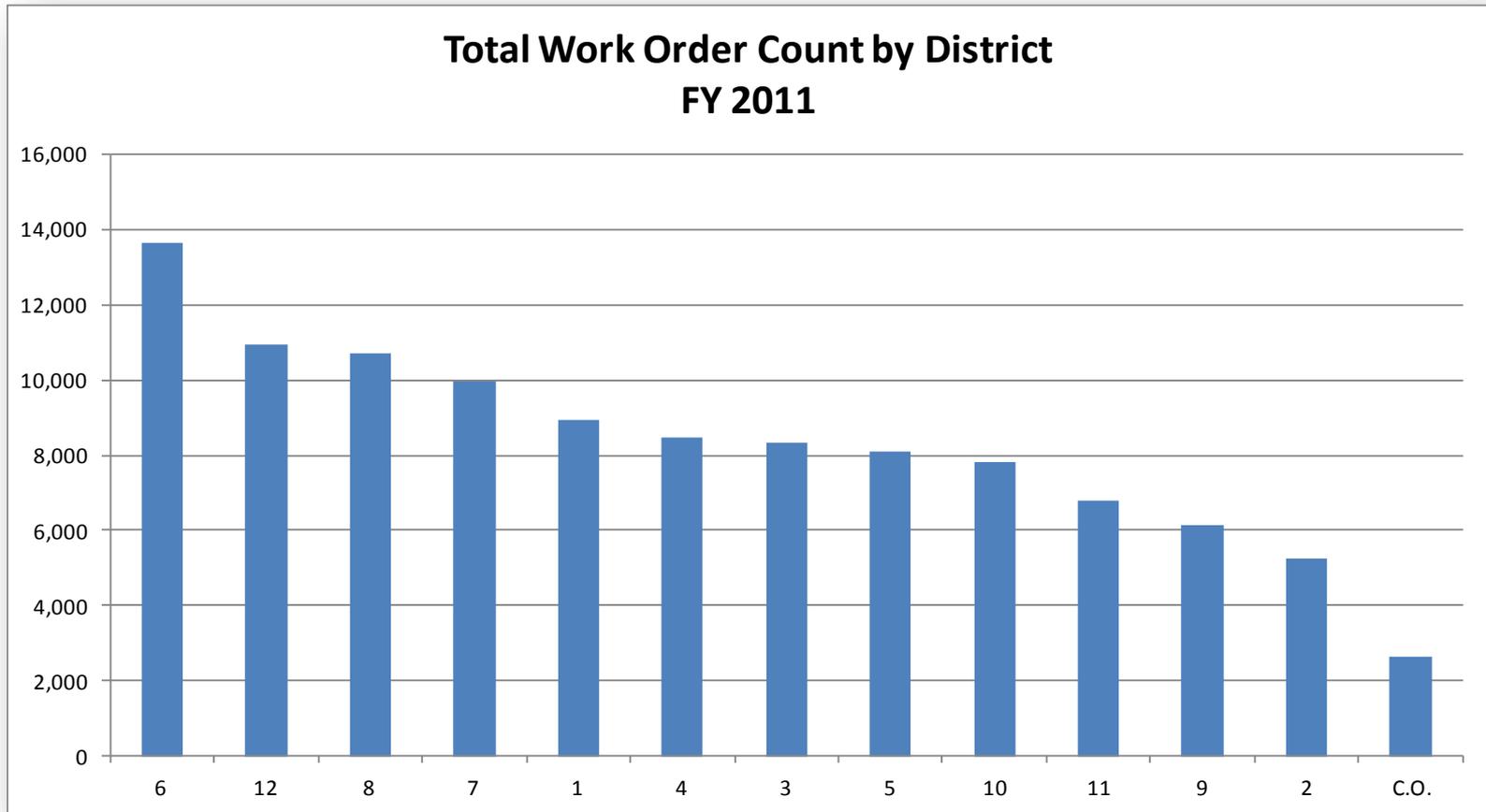
Customers



Goals & Objectives

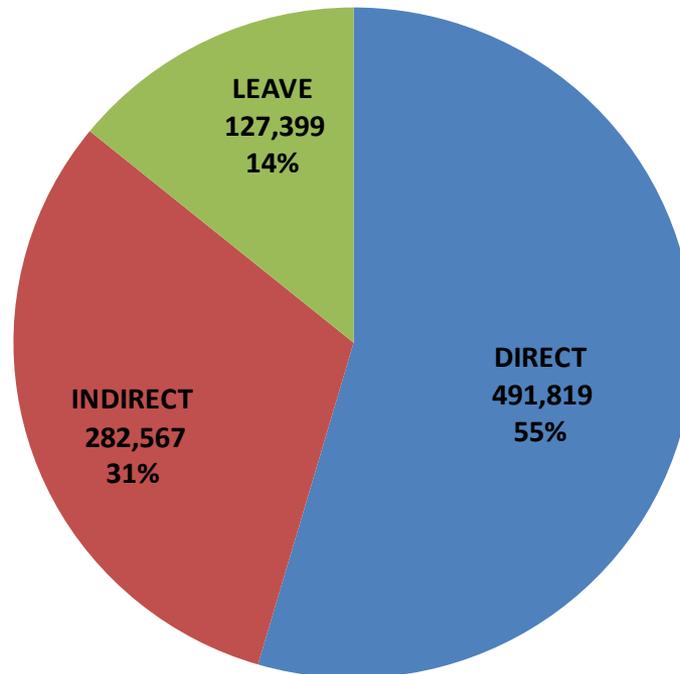
- ▶ Standardize data for ease of reporting and business analytics to assist in making business decisions
- ▶ Reduce margin for error in data capture
- ▶ Improve communication among all ODOT locations with standardized data and naming conventions
- ▶ Reduce duplicate data entry
- ▶ Reduce the time it takes to record data
- ▶ Modernize business processes to allow for ease of labor and business tracking across business units
- ▶ Reduce the number of paper forms used

Baseline Data



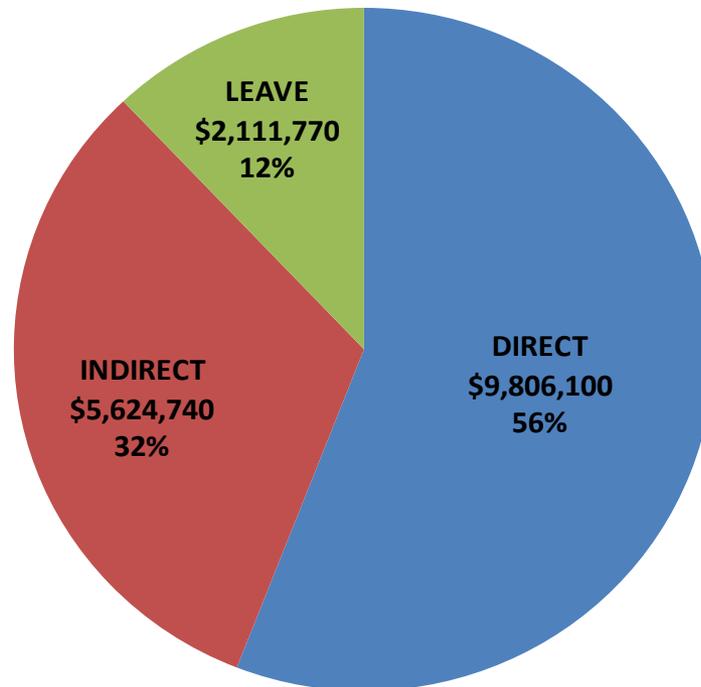
Baseline Data

**Garage Activities
Total Hours by Category FY 2011**



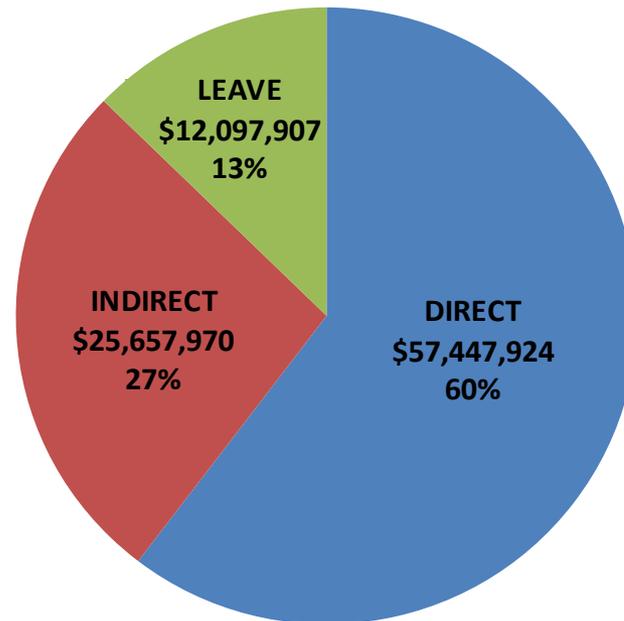
Baseline Data

**Garage Activities
Total Cost by Category FY 2011**



Baseline Data

**Highway Maintenance Activities
Total Cost by Category FY 2011**



Baseline Data

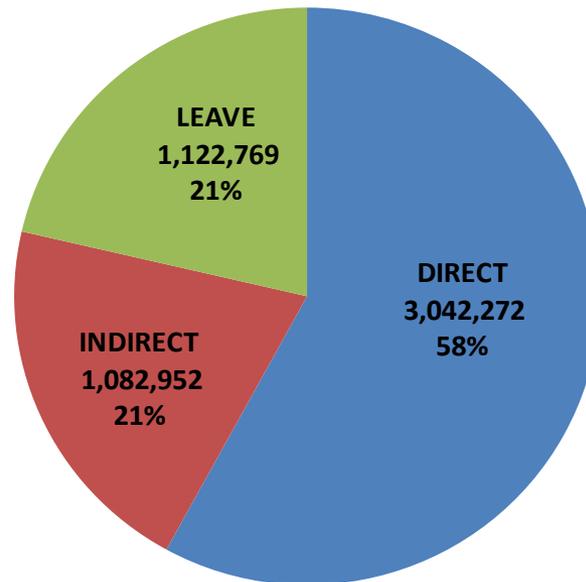
Garage Indirect Hours	
Activity	Total Hours
GARAGE CLERICAL / ADMINISTRATION (SPECIFIC GARAGE)	74,921
PARTS ROOM	57,168
MECHANIC - GENERAL (NO WORK ORDER)	28,626
PARTS ROOM PICKUP / DELIVERY	23,747
GARAGE SUPERVISION (SPECIFIC GARAGE)	23,059
TRAINING (INCLUDES TRAVEL TIME)	21,935

Garage	Cost per Hour
Direct	\$19.94
Indirect	\$19.91
Leave	\$16.58



Baseline Data

**Highway Maintenance Activities
Total Hours by Category FY 2011**



Current 502 Sample

Currently 264 versions used by ODOT

502

WORK CENTER			PROJECT INFORMATION					PROJECT TYPE			
KEY	NUMBER	TYPE	DESCRIPTION	PROJECT NO.	PROJECT NAME	PROJECT TYPE	CLASS	DATE	DESCRIPTION	NUMBER	DATE
A											
B											
C											
D											

KEY	PROJECT #	LOGS									
		Page #	Employee Name	Length	Time	Reg. 07'	Reg. 137'	Reg. 137'	Reg. 07'	Reg. 07'	
A											
B											
C											
D											

ODOT DEPARTMENT OF TRANSPORTATION
TRANSPORTATION MANAGEMENT SYSTEM

DAILY WORK REPORT

WEATHER CONDITIONS: _____

START TIME: AM _____ PM _____

STOP TIME: AM _____ PM _____

PERSON COMPLETING THE MWR 502:

Signature _____ Date _____

SIGNATURE OF MANAGER IN CHARGE:

Signature _____ Date _____

CERTIFY THE TIME REPORTED ABOVE AS ACTUAL SERVICE RENDERED TO THE DEPARTMENT OF TRANSPORTATION
DOT-1703

*Overtime exempt hours should be designated with an X after the number of hours ex. 4X

EAD 06/14/2014

10

The Kaizen Approach

Team-based energy and creativity drives immediate process improvement

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Day of Learning	Day of Discovery & Developing Improvement Ideas	Day of Improvement & Creating the New process	Day of Design Implementation & Documentation	Day of Celebration & Results Schedule 30-60-90-day follow-ups

At the end of the week, each Kaizen team has designed dramatic operational improvements



To Break for the Better

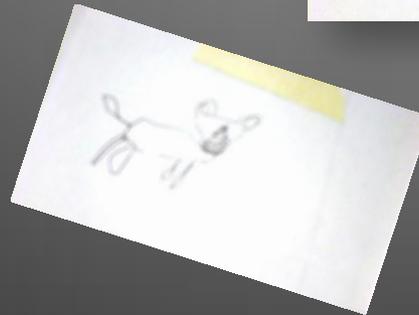
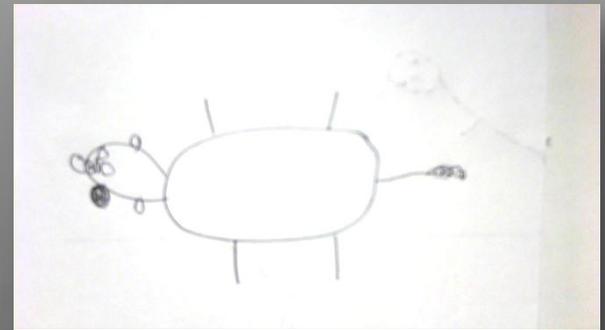
- ▶ Clear objectives
- ▶ Team process
- ▶ Tight focus on time (one week)
- ▶ Quick and simple, action first
- ▶ Necessary resources available right away
- ▶ Immediate results (new process functioning by end of week)



STANDARDIZED PIG

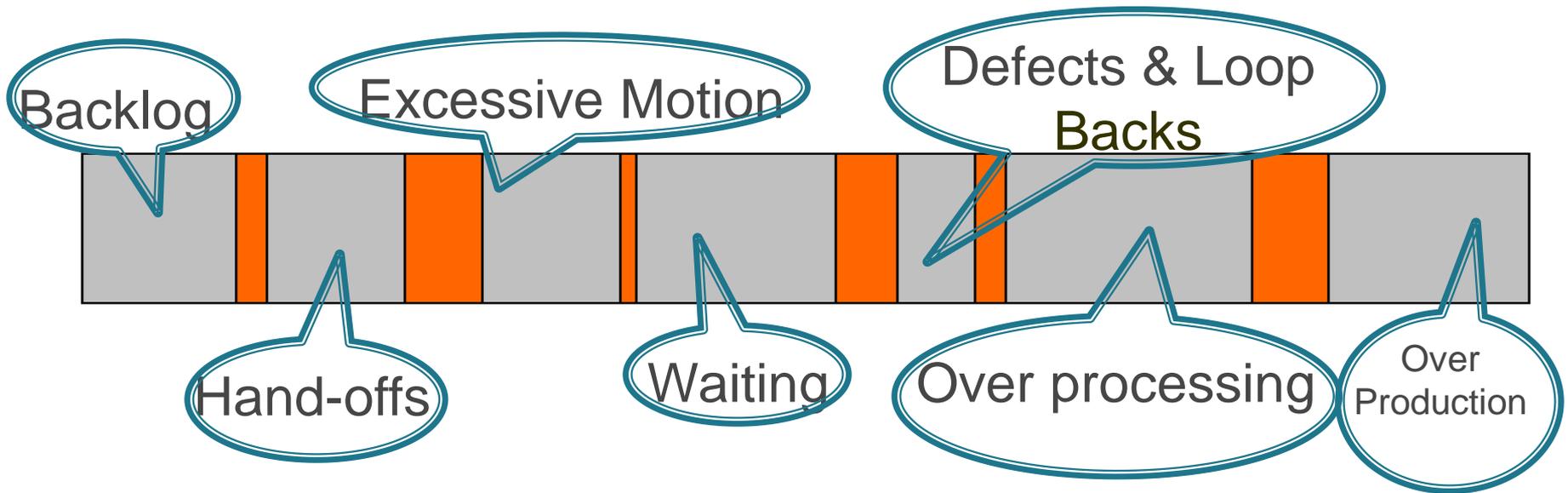


Quest for Standardization



Lead-Time Reduction

■ Wasted Time and Activity ■ Core Process Value Added



Current-State Process Map



PINK “Post-its” are points of waste!

The original processes had:

- ▶ Too many steps
- ▶ Too many handoffs
- ▶ Too much paper
- ▶ Too much transportation
- ▶ Too much “Indirect”



Intense work identifying Value and Waste



The team brainstormed and more than 68 Team Brainstormed 68 Ideas



The team analyzed and evaluated all 68 ideas



Final Redesign



Legacy Scorecard

Measure	Current Level	Target	Gap
Reduce duplication in activity recording	3 + times	1 achieved	60% reduction
Reduce time spent on paperwork	85 hours per week	Reduce by 50% - 24 hrs achieved	72% reduction
Reduce the number of forms and cost of paper	1572 forms	Reduce by 90%-achieved	99.99% reduction
Reduce the time to generate business analytic reports	A lot	Reduce by 70%	TBD under new system
Planning Time by management	45 min. per day	10 min. per day	78% reduction
Variation in who does what paperwork	44 variations	0 – achieved 1 flow	100% reduction

Impact on Staff Time

Redirected Staff Time

- Review & Approve EMS/TMS
4.5 hours/location
x 100 locations
x 250 days

112,500 HOURS PER YEAR

- Data Entry/Time Collection
(TMs, HTs, Time Keeper, Store Keeper, Mechanic)
60 hours/week
x 100 locations
x 52 weeks

312,000 HOURS PER YEAR

Impact on Staff Time

Redirected Staff Time (Continued)

Fiscal Staff

50,000 invoices/year

x 45 minutes

37,500 HOURS PER YEAR

GRAND TOTAL

474,500 STAFF HOURS

REDIRECTED TO MORE PRODUCTIVE ACTIVITIES

10% OF INVOLVED STAFF'S TIME

Intangible Benefits

- ▶ **Faster Response Time for the Motoring Public**
- ▶ **Inventory**
 - Reduced levels
 - Reduced excess/obsolete parts
 - Reduced FUTURE excess/obsolete parts
 - Carrying costs
- ▶ **Improved Accuracy**
 - Inventory receiving
 - Part/material charge outs
 - Activity tracking
 - Decision making

Estimated \$ Savings

Hard Costs

Copying & Printing Costs Forms

EM 78 (all Variations)

EM 44

EM 22

502

661

**Estimated Savings of
\$50,000 Annually**

Improvement Summary

Current Key Issues	Kaizen Improvements
<p>64 Points of Waste</p> <p>No standardized data entry</p> <p>Data integrity</p> <p>Lack of communication across Locations</p> <p>Excessive time spent in data entry</p> <p>Lack of modern business data Collection</p> <p>Excessive use of paper</p>	<p>One unavoidable point of waste</p> <p>One method defined</p> <p>From uncertain to certain</p> <p>Staff available from county to county from low to high availability</p> <p>85 hours to 24 hours per week</p> <p>All electronic version implementation</p> <p>Minimal</p>



**Administrative
System
Transportation
Recording On-hand**



Implementation Plans

- ▶ Forms Plan
- ▶ Equipment and Technology Plan
- ▶ Communication Plan
- ▶ Training Plan
- ▶ **Interim Plans**

Forms Plan

+
INTERIM

FORMS:
Electronic 502

Interim

Procedures:

- Reviewing + redefining program activities / work types (Highway Management)
- Redefining all other program activities
- Reduce lack of stock usage
- Review policies and procedures on inventory (TMS, EMS, fixed assets)
- Discover status of parts room
- Create committee to review paper flow
- Review policies and procedures on purchasing

Tech:

- Vendor review + selection meetings, software + hardware, handheld devices
- Weekly status meeting
- Requirements gathering documentations + baseline schedule
- Electronic sign in/out KLANOS
- Pilot systems
- Benchmark w/ other states
- Gather requirements for 2 or 3 way match w/ AA
- Transform stock catalog: Requirements, data conversion
- Understand parts room timeline to understand impacts
- Fixed assets, BMS, Pavement Management system, integration of data

NOW

WHAT	WHO	WHEN
78 + 44 (COMBINE) + S/I MATERIAL USAGE (From 601) (FORMERLY 'L61') Add info from EM78 HE & EM78-SUR all on one EM78	MARK G.	
502 (STANDARDIZE) COLLECT SAMPLES FROM EACH DISTRICT	MAINT. ADMIN Statewide HMA's	4-2- (meeting)
SIGN-IN/OUT (ELIMINATE)	LEADERSHIP	IMMEDIATE
Work Orders (Traffic/Bridge) (help for field employees to send as complete)	Statewide HMA's Group	2 mon
Biweekly Road Inspection		
Mock of EM78		

Equipment and Technology Plan



Who	What	When
EIMS ↳ ACTS Comm	Vendor ^{Software} Reviews + Selection Meetings	Re-Curing
ACTS & EIMS	Weekly Status Meetings	
ACTS (2) ↳ EIMS	Requirements Gathering & Documentation	In-Process (target June)
	Baseline Schedule	↓
ACTS	Electronic Sign-in/ Kronos ^{ctf}	June 17
ACTS	Pilot Systems	
Who	What	When
EIMS	Reviews Meetings Benchmark with other States	TBD Schedule by April
EIMS / ACTS	Review Kaizen Action List	End of Kaizen

Communications Plan

EXTERNAL COMMUNICATION			TRAINING		
WHAT	WHO	WHEN	WHAT	WHO	WHEN
GROUPS:			GROUPS:	SPONSORS	
OSP	CM/TM		CHIEF LEGAL		Apr. 2012
PUCO	ODPS Leadership		DD + Admin Staff		Apr. 2012
CO SHERIFF	CO Public Information		Safety Dept.		May 2012
STATE AUDIT.	PIOs		HMA Management (HT, mech, etc)		June 2012
AG	SPONSORS		PLAW/ENG		June 2012
IG	SPONSORS		BHR/FACIL		June 2012
OSHA	SAFETY DEPT.		EMS/TMS COOR.		March 14, '12
Media	PIOs		ALL DEPTS (whoever is left)		July 2012

Training Plan

419 235 5687 (cell)

"THE LEADERS"

Interim

WHAT	WHO	WHEN
LEADS Development of new training From business Training How to CHANGE	Ken's Teresa	W/ Ken's Training
Team Training Leadership Coaching	TSD Leaders	W/ Ken's Training Decision
Develop Training Plan	Training Committee	When new system Decision
PROG Training	?	?
NEW Training Training	Assess Training	As per Ken's Training

Long Range

WHAT	WHO	WHEN
Initial Training	TRAINER (MAYBE) CRAIG NO TRAINING ETC	Just in Time
Develop Training Needs	CHUCK and PERRY	When Implementation and new Training
ADD ELMS TO New Training Training	DELLA in Training	After Implementation of New Training

Overall Kaizen Benefits

- An eye opening event
- Educational
- All players involved, working on the same goal
- We put aside titles
- Combined thinking
- We became a team



What changes Monday?



- ▶ Communication starts
- ▶ “Step into the future”
- ▶ Start forms revision
- ▶ Begin looking at stock catalog
- ▶ Moving to the “New” ODOT

Personal Lessons Learned

- ▶ Great Communication
- ▶ Never realized how complicated the process was
- ▶ “Hard Card” was clearly defined
- ▶ So many different ways to do the same thing
- ▶ “Variation is eeeevil”
- ▶ ODOT has a lot of good people who know a lot of things
- ▶ Eye opening



Life as a member of a Kaizen event Team...



What Questions/Comments do you have?



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Special *THANKS* to...

Senior Leadership:

Jerry Wray, Director; Mike Cope, Assistant Director, Business & Human Resources, and Mike Flynn, Assistant Director, Field Operations

Sponsor:

Julie Ray, Deputy Director, Finance

Spencer Wood, Deputy Director, DoIT

Dave Coyle, Deputy Director, Facilities & Equipment Mgmt.

Julie Brogan, Administrator, Innovative Delivery

Sonja Simpson, Deputy Director, Operations

SME's: Wendy Flowers, PM, DoIT; Tom Pannett, Legal; Ellen Hall, PM, DoIT; Crystal Beacom, PM, DoIT; Brandy Brogan, Timekeeper, Franklin County